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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/519,610	01/04/2006	Dan Rutger Weinholt	P16409US1	9477
27045	7590	08/13/2008		
ERICSSON INC. 6300 LEGACY DRIVE M/S EVR 1-C-11 PLANO, TX 75024			EXAMINER	
			JUNG, MIN	
			ART UNIT	PAPER NUMBER
			2616	
			MAIL DATE	DELIVERY MODE
			08/13/2008	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/519,610	<b>Applicant(s)</b> WEINHOLT ET AL.	
	<b>Examiner</b> Min Jung	<b>Art Unit</b> 2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04 January 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, line 3, the formatting of the claim recitation is misleading – it is not clear if the “frames” comprise the four items that follow, or if the “cyclically transmitting” step comprises the four items that follow, or something else? Is the “cyclically transmitting” the only positive step in the method claim? At line 4, it is not clear what is actually being done “according to a first keying mode” - Is a verb missing (i.e., “generated”, “encoded”, etc)? At line 6, the same question is raised for the phrase - consider revising it to include a verb. At the last line, it is not clear what is meant by “an operative traffic phase” – does it imply that there is also a non-operative traffic phase?

In claims 5 and 6, it is not clear what is meant by “a frame B” - how does it distinguish from “a frame”?

In claim 7, the sentence is tangled, and therefore, is unclear in meaning.

In claim 8, it seems that “10.000” is a typo.

In claim 9, line 6, it is not clear if “the number of symbols” means the total number of symbols in the frame or an order number or position location in the frame? At

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line 12, it is not clear what is meant by the “performing” step - does it mean that the updating step is repeated for multiple frames? At lines 13-14, the phrase is tangled and is unclear in meaning, and it is also not clear if the phrase is tied to the “performing” step.

In claim 10, lines 4 and 5, “the second keying order mode” and “the first keying order mode” lack antecedent basis. At line 5, it is not clear what is the subject of the phrase “is used after the frame alignment word”.

In claim 11, it is not clear what is meant by the phrase “which applies for the channel”.

In claim 12, “the measured bit error rate” and “the receiver” lack antecedent basis.

In claim 14, “the error signal”, “the detected signal”, and “the decision boundaries” lack antecedent basis.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 3, 4, and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Seki et al., US 5,771,224 (Seki).

Seki discloses OFDM transmission system. Regarding the present invention, Seki teaches a method of communicating digital data, comprising the steps of : cyclically transmitting frames (the transmission frame format shown in Fig. 2) comprising a first number of symbols according to a first keying mode using a first constellation (QAM symbols), a second number of symbols according to a second keying mode using a second constellation (QPSK symbols), whereby the first constellation includes more signaling points than the second constellation, the first and second keying modes being used at predetermined positions in the frame (as shown in Fig. 2, the QAM symbols and the QPSK symbols are used at predetermined frequency and time positions in the frame), whereby both the symbols according to the first and second keying mode carry information under at least an operative traffic phase (both QAM symbols and the QPSK symbols carry information in the operative timeslots and not in the first or second timeslots which are used for synchronization and reference symbols). See col. 7, lines 22-53.

Regarding claim 3, Seki teaches that the second constellation is a subset of the first constellation (QPSK constellation is a subset of QAM constellation).

Regarding claim 4, Seki teaches that the second constellation comprises at least two signaling points (QPSK comprises four discrete symbols).

Regarding claim 7, Seki teaches frame alignment word comprising a sequence of predetermined symbols inserted periodically after transmitting a plurality of frames (null symbols and reference symbols are inserted in the first two timeslots of each time frame, See Fig. 2, and col. 7, lines 33-45).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 2, 5, 6, 8, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seki.

Regarding claims 2, 5, and 6, Seki fails to teach limiting the number of symbols sent under the QPSK mode to be 1 in a frame, 1 out of 5-20 symbols in a frame, or 1 out of 20-100 symbols in a frame. However, setting the number of symbols transmitted in a frame depends on an optimum system performance, and therefore a system designer can control such factor without departing from the core of the teaching. Therefore, it would have been obvious for one of skill in the art at the time of the invention to design the frame to carry however many symbols under the QPSK mode.

Regarding claim 8, Seki fails to teach inserting frame alignment word for every 1000-10,000 symbols. However, it is well known to insert frame alignment word or synchronization word for synchronization at the receiver. Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to design the system to insert frame alignment words periodically for most favorable operation.

Regarding claim 17, Seki fails to teach forward error correction coding. Forward error correction coding is an well known scheme in the field of communication, and is

regularly utilized to protect data to be transmitted. Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to implement Seki's teaching by employing a forward error correction coding for protecting the transmitted data.

### ***Allowable Subject Matter***

7. Claims 9-16 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The Dent PG Pub., the Krishnamoorthy et al. patent, the Bruhn patent, the Maruyama patent, the Mansour et al. patent, are cited for further references.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Min Jung whose telephone number is 571-272-3127.

The examiner can normally be reached on Monday through Friday 9:00 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynn Feild can be reached on 571-272-2092. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Min Jung/  
Primary Examiner, Art Unit 2616